

COMPOSITE PRODUCTS,
METHODS AND APPARATUS

ABSTRACT OF THE DISCLOSURE

5 A low-stretch, flexible composite, made of one or
several sections, particularly useful for making a sail (2),
includes first and second polymer films (52, 62) with
discontinuous, stretch-resistant segments (16) therebetween.
The segments extend generally along the load lines (17) for
10 the sail. The segments have lengths which are substantially
shorter than corresponding lengths of the load lines within
each section. The ends of the segments are laterally
staggered relative to one another. Mats (20) of generally
parallel mat elements can be used as the segments. The mat
5 elements typically include discrete multifiber yarns (24, 26)
and/or a fiber array (22), typically created by pneumatically
laterally spreading apart the fibers of an untwisted
multifiber yarn (32). A laminating assembly includes first
and second flexible pressure sheets (66, 68), defining a
20 sealable lamination interior (82) containing the material
stack (64) to be laminated, housed within an enclosure (90).
A partial vacuum is created within the lamination interior and
heated fluid is circulated in contact with the pressure sheets
to quickly and uniformly heat the pressure sheets and the
25 material stack being laminated.